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Model State Information System Training Program. Volume V. Handbook for MSIS Components

Cincinnati Univ, Ohio Southwestern Ohio Regional Computer Ctr

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Model State Information System
Training Program

Volume V

Handbook

For

MSIS COMPONENTS

Prepared for the

U.S. Environmental Protection Agency
Office of Water Supply
Washington, D.C. 20460
under GSA Contract No. GS-05S-10458
Task Assignment OWS-77-01

by the

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This handbook is one of six prepared for the U.S. Environmental Protection Agency's Office of Drinking Water by the SouthWestern Ohio Regional Computer Center.
This handbook is intended to be used by instructors and participants during the State installation of MSIS, and for later reference by State personnel. There are six volumes of MSIS documentation, comprising 12 physical books. This handbook describes the contents of all six volumes, resulting in its being an annotated index to the System documentation, Volumes VII-XII.

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Ellen G. Miller
Project Manager, OWS-77-01

FOREWORD

The responsibility for implementing the Safe Drinking Water Act of 1974 was delegated to the Office of Water Supply (OWS) of the U.S. Environmental Protection Agency (EPA). In order to assist the States and EPA Regions with the capability to fulfill their basic responsibilities for monitoring water quality, as required by the Safe Drinking Water Act, OWS entered into a series of tasks.

The first series, with American Management Systems, Inc. (AMS) of Arlington, Virginia, resulted in both the concept of an informational system and its computerized version (the Model States Information System) which could be selected by interested States.

The second series of tasks was with the SouthWestern Ohio Regional Computer Center (SWORCC) of Cincinnati, Ohio. One major effort was to perform the detail systems design, programming, testing, and documentation of the computerized Model State Information System (GSA Contract No. GS-05S-10458, Task Assignment No. OWS-76-02).

Installation Plan - Phase 1, the other major effort, was identified as Task Assignment No. OWS-77-01, under GSA Contract. The purpose of that was to assist the EPA Regions in ascertaining the needs of the States and Regions for aid while installing the MSIS and to develop training packages based on Regional recommendations.

The MSIS Training Program is a direct result of OWS-77-01. This handbook, one of two prepared as a guide for both instructors and participants on the contents of the system documentation created under Task Assignment OWS-76-02, is also a part of the overall MSIS Training Program which contains six separate volumes.

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PURPOSE

This handbook is one of six prepared for the U.S. Environmental Protection Agency's Office of Water Supply (OWS) by the SouthWestern Ohio Regional Computer Center (SWORCC). All six handbooks cover different aspects of the Model State Information System (MSIS), also developed for OWS by SWORCC.

This handbook is intended to be used by instructors and participants during the State installation of MSIS, and for later reference by State personnel. The installation of MSIS is accomplished through the joint efforts of SWORCC teams and the State's selected computer facility personnel. Recognizing that without training, the computer facility's staff would have a minimal knowledge of MSIS at the end of the installation process, Volumes V, System Components, and VI, System Specifications, of the MSIS Training Program were created.

There are six volumes of MSIS documentation, comprising 12 physical books. This handbook describes the contents of all six volumes, resulting in its being an annotated index to the system documentation, Volumes VII - XII. Its sister, Volume VI, System Specifications, covers basic design criteria and policies that governed the detail design, programming, testing, and documentation of MSIS.

INTRODUCTION

The contents of this document are basically arranged by each of the six manuals prepared under OWS-76-02, MSIS system documentation. The manuals are presented in three categories based on the anticipated user of each MSIS manual. The groups are as follows:

1. the system user, (state water personnel)

2. the operations staff (State ADP personnel), and

3. the systems analysis and programming staff(s) (State/ADP personnel)

Within these categories are these groupings of manuals:

1. the User's Manual (Volume VII) and Data Entry Instructions Manual (Volume XI),

2. the Installation, Operation, and Keypunch Instructions Manuals, (Volumes VIII, IX, and X, respectively,) and

3. the Program Documentation (Volume XII) in three parts -- Subsystem Documentation, Exhibits, and Data Element Dictionary.

The manuals are described in terms of their purpose, anticipated use, user, and contents. In general, pertinent extracts from the manuals have been included in their descriptions; however, the list of Standard Error Messages for Processing Options has been included in Appendix E, since it is referred to in more than one manual.

This document is intended to deal with what the documents contain and <u>not</u> why the system was developed and documented the way it was. See Volume VI, System Specifications, for all design and other MSIS criteria. Since MSIS documentation is directed towards a particular user, the state may divide it up and distribute it in part to the appropriate user. As a result, to ensure that each user has all the information necessary for his/her purposes, portions of the manuals are reiterated between volumes.

DESCRIPTIONS OF MSIS MANUALS
Manuals for the System User

A. User's Manual, Volume VII

Purpose: The User's Manual is designed to help the State water program personnel understand and use the Model State Information System (MSIS). It is presented in general terms understandable by the user and may be of interest to data processing personnel:

1. to obtain a general understanding of the system, its purpose and functions, and

2. to understand the user's concept of the system as presented in general terms in the User's Manual.

Introduction: The Introduction to the document deals with a general developmental history of MSIS from the Safe Drinking Water Act of 1974 through the detail design and a general system description of MSIS.

User Defined Selection of Information: This section explains in detail the technique of selecting particular records from a file to be printed in a specified report format. It is concerned with the process of defining the selection logic and the entering of logical statement(s) on the record selection input forms, SEL1 and SEL2. For examples of these processing option input forms, see Appendix C of this Volume V.

User Defined Report Sequence: Like "User Defined Selection of Information", this section deals with (1) the choosing of the most appropriate report sequence for the purpose of the report and (2) the interpretation of the desired report sequence onto the SORT selection input form. An example of this processing option input form is also included in Appendix C of this Volume V.

Compliance Cycles: The reporting of the sample and analysis data maintained by the Water Quality Compliance Subsystem is required at regular intervals. To distribute the work load as effectively as possible, MSIS has been designed to allow the user to group public water systems into various reporting cycles called Compliance Cycles. This portion of the User's Manual is devoted to an explanation of the establishment and use of these compliance cycles to evenly distribute the workload of the State during the reporting period.

Error Message Table: The Error Message Table (EMT) consists of the error codes and their respective

definitions for all the errors in MSIS resulting from data entry. These error codes and their respective definitions have been included with descriptions in the User's Manual for reference during error correction processes.

The error message codes are three digit numbers; 001 through 999. Numbers 001 through 100 are used for errors which caused an entire transaction to be rejected. Numbers 101 through 400 are used as warning messages in cases where the value for a single input field is questionable but is still used as valid input. Numbers 401 thru 900 are used when the value of a specific input field is invalid and is not used in the update process. Numbers 901 thru 999 are currently reserved for future use by the state or regional offices at their discretion.

Summary Code Value Assignments

001-100	REJECT
101-400	WARNING
401-900	INVALID
901-999	reserved for future use

Following are the error message table entries that have been created and supplied to the states.

Error Code	Error Message
001	REJECT-INVALID RECORD-ID
002	REJECT-RECORD ALREADY EXISTS
003	REJECT-NO MATCHING RECORD-ID
004	REJECT-RECORD IS INCOMPLETE
005	REJECT-CONTAM ID INVALID
006	REJECT-STATE VALUE TOO LOW
007	REJECT-STATE VALUE TOO HIGH
008	REJECT-FED. RECORD MISSING
009	REJECT-REC. HAS INVALID DATA
010	REJECT-NOT NUMERIC
011	REJECT-VALUE UNACCEPTABLE
012	REJECT-VALUE TOO HIGH
013	REJECT-VALUE TOO LOW
014	REJECT-NOT IN CODE TABLE
015	REJECT-PWS ID INVALID
016	REJECT-LAB NOT AUTHORIZED
017	REJECT-INVALID TRANSACT CODE
018	REJECT-REQUIRED DATA MISSING
019	REJECT-NO MATCHING MILESTONE
020	REJECT-INVALID DELETE CODE
021	REJECT-INVALID CREATE CODE
022	REJECT-TOO MANY VIOLATIONS
023	REJECT-NO MATCHING VIOLATION

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024	REJECT-INVALID REQUEST CODE
025	REJECT-TOO MANY MILESTONES
026	REJECT-INVALID OCCURRENCE
027	REJECT-METHOD NOT ON TABLE
028	REJECT-DUPLICATE MILESTONE
029	REJECT-ILLEGAL DELETION
030	REJECT-ASSOC VALUE MISSING
031	REJECT-TOO MANY CONTAMINANTS
032	REJECT-NO MATCHING CONTAMINANT
033	REJECT-INVALID DATE
101	WARNING-CHECK ELEMENT VALUE
102	WARNING-ELEMENT EXCEEDS MAX
103	WARNING-ELEMENT BELOW MIN
104	WARNING-NOT IN CODE TABLE
105	WARNING-NOT IN DATA ELE TBL
106	WARNING-DEFAULT VALUE USED
401	INVALID-NOT NUMERIC
402	INVALID-NOT IN CODE TABLE
403	INVALID-NOT A VALID DATE
404	INVALID-ELEMENT EXCEEDS MAX
405	INVALID-ELEMENT BELOW MIN
406	INVALID-ELEMENT MISSING
407	INVALID-VALUE UNACCEPTABLE
408	INVALID-NOT ALPHABETIC
409	INVALID-NOT ON PUB WATER TBL
410	INVALID-ASSOC VALUE MISSING

Standard Error Messages for Processing Options: Similar to the EMT description above, the standard error messages resulting from faulty processing option input are included in the User's Manual. These error messages are also present in the Operations Manual. See Appendix E of this Volume V for an actual list.

Subsystem Descriptions: There are nine subsystems in MSIS. The subsystems in general, were developed by function. The description of the subsystems occurs throughout the documentation, i.e., here, in the Operations Manual, and in the Program Documentation, Subsystem Documentation. The descriptions in the User's Manual address specifically:

1. how to enter data to a subsystem

2. the interpretation of a subsystem's output reports, and

3. handling errors specific to the subsystem.

Summary of Data Requested to be Reported to EPA: One of the main purposes of MSIS is to produce machine-readable data to be sent to EPA. This part of the User's Manual lists the data elements EPA has requested the States to report to them. Omission of these data elements when entering data does not necessarily cause rejection of the entire record; however, a Standard Warning Report is generated as a result of missing EPA requested fields. The Standard Warning Report is also addressed in this part of the User's Manual.

Following is the list of data elements requested by EPA by the categories of the required annual federal reports.

Public Water System Inventory Data

1. PWS I.D. number
2. State which is providing surveillance over this system
3. PWS name
4. PWS address
5. State (May not be the same as #2)
6. Zip Code
7. Phone number
8. Code which indicates system not covered by Federal regulations
9. Code describing the type of owner of a PWS
10. Code to indicate if this is an interstate carrier supply
11. Code to indicate if this is a community or non-community supply
12. Code to indicate if the PWS is active or not
13. Date on which the PWS became inactive
14. Code to indicate a reason for deactivating the PWS
15. Code to indicate if this is a consecutive water system
16. PWS I.D. number of the supply selling water to this system
17. Code to indicate where the seller gets its water (surface, ground, purchased)
18. Population served
19. Number of service connections
20. Air temperature (fluoride)
21. Number of water systems buying water from this system
22. Average daily production of PWS -Design
23. Maximum allowable capacity of PWS - Design

24. Storage capacity of the system
25. Percent of bacteriological samples that can be replaced by chlorine residual sampling
26. Turbidity limit allowed other than 1 T.U.
27. Contaminant I.D. where follow-up monitoring is required because of violation of MCL
28. Frequency of monitoring above contaminant. (27 and 28 repeat again for total of four times)
29. Code to indicate that radioactive monitoring is required and what type
30. Code to indicate if the PWS has a variance or exemption
31. Contaminant I.D. of the variance or exemption
32. Modified MCL allowed by the variance or exemption (30,31,32 repeat again to record two variances and/or exemptions)
33. Source name
34. Code to indicate ground, surface, or purchased
35. Codes to indicate which of 16 treatments are applied to this source; these are the same as listed on our current inventory with space for 4 new ones to be added later

Violation Data

1. A violation code to relate back to the State's records
2. The State PWS I.D. code
3. The code of the State providing surveillance over the water system
4. Code describing the type of violation
5. MCL violated
6. Contaminant I.D.
7. Analysis results
8. Violation date

Variance and Exemption Data

1. Code to identify variance or exemption
2. A code to tie this summary back to the State's record
3. The State PWS I.D. code
4. Code of the State providing surveillance
5. MCL allowed by the variance or exemption
6. Contaminant - I.D.

Enforcement Action Data

1. State case identification code
2. State code
3. Date on which enforcement action was initiated
4. Flag to indicate if the case is open or closed
5. Code to indicate the type of plantiff in the case
6. Type of defendant in the case
7. I.D. of PWS involved
8. Legal status of the case
9. Date when the record was last up-dated

Summary of Data Required for MSIS processing: As opposed to EPA requested data, there are certain data elements that are required by the system to create records. This section of the User's Manual lists those data elements for the user's reference.

The following lists the data elements that are "required for MSIS processing" by subsystem. This means that in order to collect and maintain data within a specific subsystem this minimum of data must be entered.

Public Water System Inventory

For each Public Water System:

1. PWS ID

2. Plant Type - community
   non-community

3. Population Served

4. Water Source Code - Ground
   Surface
   Purchased

   - At least one water source must be identified for each Public Water Sytem.

Water Quality Compliance

For each sample:

1. Public Water System ID

2. Contaminant ID

3. Sample Type - Regular
Check
Raw, etc.

4. Sample Date or Date of Last Sample

5. Sample Analysis Method (except for Turbidity)

6. Lab ID

Additional data elements on individual sample forms:

1. Sample Time (for Bact and Turbidity)

2. Analysis Result

3. Analysis Date

4. Sample Location (to associate check samples with regular samples)

Additional data elements on summary sample forms:

1. Actual number of samples taken

2. Sample Period - Start Date
End Date

3. Flag if check samples taken - federal
State

4. Number of check samples taken

5. Number of samples in violation - federal
State

For the Lab Table:

1. Lab ID

2. Owner Type

3. Contaminant Group

4. Analysis Method

For Violations:

1. Public Water System ID

2. Regulation Level - federal
State

3. Violation Type

4. Violation Date

5. Violation ID

Variance and Exemption

For each Variance or Exemption:

1. Variance and Exemption ID

2. Type - Variance
   Exemption

Enforcement Actions

For each Enforcement Action:

1. Enforcement Actions ID

Operator and Mailing

For each Operator or Mailing Addressee:

1. O&M ID

2. Type - Operator
   Other categories

3. Name

4. Street

5. City

6. State

7. Zip

Regulations

1. Federal Regulations

Standard Processing

1. Acceptable values for editing

Appendix: The appendix to the User's Manual contains:

1. a description of the fields on the Data Entry Instruction form. See the Data Entry Instruction

Manual description below for an explanation of the form. See Appendix B of this Volumne V for an example of the form.

2. a list of abbreviations used throughout the systen documentation, and

3. a glossary of terms, many of which are data processing terms, used in the system documentation. These definitions are usually quite simple and limited to their use in the documentation.

B. Data Entry Instruction Manual, Volume XI

Introduction: This manual was designed to give the user of the Model State Information System (MSIS) instructions on how to fill out all input forms and turnaround documents contained in the system. Each form and document has a number assigned to it which was developed as part of the documentation of MSIS. The number is in the format AAAA.NNN where AAAA is the four character subsystem abbreviation and NNN is a three digit number ranging from 100 to 199 for input forms, and 400 to 499 for turnaround documents. All instructions are arranged numerically by form within a subsystem. This means that a user must know the form number to use Volume XI.

Form Descriptions: This section of this manual explains the fields on the Data Entry Instruction Form, which contains all the instructions for entering data on MSIS input forms and turnaround documents. This explanation is intended to provide the user with a clear understanding of the instructions contained on this form. See the appendix for a copy of the form; its fields contain the following information:

1. SOURCE DOCUMENT NAME: contains the title of the input form.

2. EXHIBIT: contains the input form number which is being explained.

3. PURPOSE: contains a short description of the purpose of the input form.

4. LEGEND: contains the abbreviations and definitions used in "Additional Instructions."

5. CARD COL. FROM/TO: contains the card columns into which this information is keypunched.

6. INPUT DOCUMENT NAME: contains the heading as it appears in whole or part on the input form.

7. DESCRIPTION: contains instructions for entering this information.

8. ADDITIONAL INSTRUCTIONS: are presented as further clarification. The abbreviations utilized are explained in "LEGEND" above.

Data Entry Instructions: This part of Volume XI is the user's reference guide to the correct entries for all fields on all input forms. It contains the instructions for filling out each MSIS input form and turnaround document.

DESCRIPTIONS OF MSIS MANUALS

Manuals for the Operations Staff

A. Installation Manual, Volume VIII

Purpose: The Installation Manual begins with a description of the hardware and software requirements for installing the Model State Information System (MSIS). It also includes a description of the materials provided in machine-readable format upon installation and the procedures designed to perform the installation.

Minimum Hardware Configuration: This section is a description of the computer machinery determined necessary to operate, and therefore, install MSIS. It is stated in terms of IBM equipment even though the system is not actually limited to use on IBM equipment. However, other manufacturer equipment must have equivalent capabilities of the IBM configurations stated.

Summary of Minimum Hardware Configuration Requirements

Mainframe:	Byte oriented medium to large scale IBM System 360/50 or larger IBM System 370/145 or larger
Operating System:	OS type Will support MFT or will support MVT or will support VS1 or will support VS2(SVS and MVS)
Core Storage:	512K bytes of which 150 K is accessable by a user program
Tape Drives:	3 at any one time
Disk Drives:	3 at any one time: 1 for the operating system 1 for temporary work space 1 for MSIS source and load libraries, files and tables

Minimum Software Requirements: This is a description of the capabilities of the servicing computer organization necessary to operate, and therefore, install MSIS in terms of object programs.

In summary, the minimum software requirements are:

ANSI COBOL Compiler X3.23-1968
SORT/MERGE Utility similar to IBM Program Product 5740-SM1
Utility to create libraries similar to IBM IEBUPDTE

MSIS Installation Tapes: The Model State Information System will be delivered on magnetic tape for installation. This portion of the Installation Manual lists the characteristics and contents of the tapes delivered. The contents described include:

1. Source Modules
2. Copy Modules
3. Job Control Modules
4. Files and Tables

Installation Procedures: These are step-by-step instructions for creating libraries and compiling programs.

Test Procedures: The final step of the actual installation process is the running of the supplied test data to generate results to be compared against pre-determined results for system consistency and accuracy.

B. Operations Manual, Volume IX

Purpose: The purpose of the Operations Manual is to provide the computer operations staff of the computer facility housing MSIS with a general description of the Model State Information System (MSIS) and a detailed description of each computer program, by subsystem.

System Overview: The System Overview describes the general make-up and function of MSIS. The Model State Information System (MSIS) is a batch computer-based information system designed to be used by the individual states and EPA regions to meet the requirements of the "National Interim Primary Drinking Water Regulations" (December, 1974). These regulations were formulated by the U.S. Environmental Protection Agency under the authority of the Safe Drinking Water Act of 1974.

Using as a basis the Program Evaluation Requirements, Concepts and Plans for EPA Safe Drinking Water Program (Office of Water Supply, EPA, October, 1975), American Management Systems, Inc. (AMS), performed a feasibility study and general systems design of the Model State Information System (June 15, 1976). Detail systems

design, programming, testing, and documentation were carried out by SouthWestern Ohio Regional Computer Center.

The Model State Information System (MSIS) is designed to be portable and transferable, so that the individual states can use it on their various computer systems. At the same time, MSIS is flexible enough that the states may select segments of the system that fit their needs and may even easily modify the system to add to its functions.

Modularity of MSIS allows for flexibility. In order to give the States and regions the capability to fulfill their basic responsibilities to OWS, a minimum of five subsystems are required to do MSIS processing. They are the Public Water System Inventory Subsystem, the Water Quality Compliance Subsystem, the Regulations Subsystem, the Federal Reporting Subsystem, and the Sandard Processing Subsystem. Four additional subsystems may be added, each at the discretion of the State or Region: the Variances and Exemptions Subsystem, the Subsystem, the Enforcement Actions Subsystem, and the Operator and Mailing Subsystem. In this way, the state may selectively add to or replace functions they currently have.

Within the subsystems, there is a built-in flexibility allowing the states to mold the system to better meet their individual needs. As an example, the Regulations Subsystem allows the states to input state regulations in addition to the required federal regulation. Flexibility is also given in report generation by allowing the state to select what information is contained on a fixed report format and in what order the report is produced. It must be emphasized, however, that generally changes other than the 2 above may require programming modifications.

To contribute to the uniformity of MSIS, the following functions were standardized:

1. File Maintenance
2. Error Processing
3. History Processing
4. Report Generation
5. Data Editing

The System Overview of Volume IX also describes system requirements and naming conventions. Following are the naming conventions.

1. File Name Abbreviations

Each file and table has associated with it a three-letter abbreviation used in the full, programming name as an abbreviation for the file and a two-letter mnemonic prefix used in the files data element mnemonic names.

File Name	File ID	Mnemonic Prefix	Subsystem
Compliance Status File	CSF	(none)	WAQC
Code Value Table	CVT	CV	MSIS
Data Element Table	DET	DE	MSIS
Deviations File	DVF	(none)	FEDR
Enforcement Actions File	EAF	EA	ENAC
Error Message Table	EMT	EM	MSIS
Laboratory Table	LBT	LB	WAQC
Optional Error File	OEF	OE	MSIS
Operator and Mailing File	OMF	OM	OPER
Public History File	PHF	PH	PWSI
Periodic Sample File	PSF	PS	WAQC
Public Water File	PWF	PW	PWSI
Public Water Table	PWT	PT	PWSI
Regulations File	RGF	RG	REGS
Sample Analysis File	SAF	SA	WAQC
Standard Error File	SEF	SE	MSIS
Standard History File	SHF	SH	MSIS
Variances and Exemptions File	VEF	VE	VAEX
Violations File	VIF	VI	WAQC

2. COBOL Programming Names

The file and table data element names used in programming are assigned using the three letter file ID followed by a dash and a one (1) to twenty-six (26) character descriptive name. Example: PWF-PLANT-POPULATION-SERVED. (ANSI COBOL allows a maximum of thirty characters for a data name.)

3. Mnemonic Names

The Data Elements of some of the permanent files and tables have mnemonic names in addition to the COBOL programming names. The mnemonic name is formed using the two-letter mnemonic prefix followed by a dash and a one (1) to seven (7) character abbreviation of the descriptive portion

of the corresponding programming name. Example: PW-PL-POPL for PWF-PLANT-POPULATION-SERVED. The mnemonic names are used when filling in the SORT and SELECTION processing option forms, and also appear on the Standard Error Report.

4. Exhibits

Exhibit numbers are prefixed by the four-letter subsystem prefix followed by:

A. 100-199 for input forms

B. 200-299 for record definitions

C. 300-399 for report layouts

D. 400-499 for turnaround documents

Finally, the System Overview of Volume IX includes descriptions of the permanent files and tables and their functions, standard error messages for processing options, (see Appendix E for a list) and restart procedures both for the system and for particular programs. MSIS has two types of restarts. The first is a system restart which may occur as a result of machine failure or program abend. The second is a RESTART processing option record which is used when creating turnaround documents.

As a general rule, if a system restart is necessary, the entire jobstream must be entered again. All files that were created during the run in error must be scratched. Make sure that all of the original input is used so there will be no chance for duplication of output.

To allow for printer error while creating turnaround documents, MSIS uses a RESTART processing option record. All that is necessary to restart the program is to enter the page number where the restart is to begin in the RESTART card. The program will then start with that page and proceed to the normal end of the job.

Description of Program Modules: This section is divided by subsystem. For each subsystem there is a general description of its function(s) and the subsystem flow. For each program module within a subsystem there are complete descriptions including:

1. the function

2. inputs,

3. processing options,

4. outputs, and

5. I/O charts showing the destination of output files, if any.

An example follows.

PWSI020 - Public Water File (PWF) Selection

a. Function

The function of this program is to search the Public Water File (PWF) and select records to produce any or all four (4) of the following reports:

1. Condensed Report (PWSI030)

2. Production and Capacity Data Report (PWSI040)

3. State Discretionary Data Report (PWSI050)

4. Comprehensive Report (PWSI060)

b. Inputs:

Data Element Table (DET)

Public Water File (PWF)

c. Processing Options:

PROC (PWSI.113)

SEL1 (PWSI.107)

SEL2 (PWSI.108)

d. Outputs:

Selected PWF records

C. Keypunch Instructions Manual, Volume X

Introduction: Similar to the Data Entry Instructions Manual, this manual provides detailed instructions for

transcribing data from input forms to computer-readable format. Although the term "keypunch" and the instructions imply the use of punch cards, the system is not limited to this form of transcription.

Form Description: The keypunch instructions are contained on preprinted forms. The "Keypunch Instructions" form, included in Appendix B of this Volume V, contains the following information:

1. SOURCE DOCUMENT NAME: contains the title of the input form.

2. EXHIBIT: contains the input form exhibit number which can be found in the upper right corner of the input document.

3. CARD COLUMN FROM/TO: contains the column numbers to be punched.

4. FIELD DESCRIPTION: contains the heading from the input document of the field defining those card columns.

5. INSTRUCTIONS/KEYPUNCH: contains the appropriate abbreviations from the legend. (Example: A,LJ means Alpha,Left Justify)

6. INSTRUCTIONS/OTHER: contains additional instruction needed for clarity.

Keypunch Instructions: The remainder of Volume X contains the specific keypunch instructions for each of the fields on all of the input forms and turnaround documents. The instructions are arranged by subsystem in numerical sequence of the Exhibit Number in the upper right corner of the input form (e.g. REGS.100). This allows the user to reference the instructions for a form.

DESCRIPTIONS OF MSIS MANUALS
Manuals for Other DP Personnel

A. Program Documentation, Volume XII, Part 1, Subsystem Documentation

Purpose: This manual tells the systems analyst and programmer, first, how to understand the documentation by describing the general system development approach and the structure of the documentation, and second, the functions of each program within the Model State Information System (MSIS). If it is necessary to make alterations to any of the programs, this document will supply to the data processing personnel all the basic design information which was used to create the original programs and the standard procedures for designing and documenting those changes.

System Overview: This section of the Program Documentation begins with a general description of the Model State Information System. It continues with the general system approach to file maintenance, error processing, history processing, report generation, and data editing. It, like the Operations Manual, contains naming conventions for file names and abbreviations, COBOL programming, data elements and exhibits, as well as a description of each of the permanent files and tables. Finally, it contains discussions of Hierarchy plus Input/Process/Output (HIPO) diagram documentation including Visual Tables of Contents (VTOC) and the use of the Copy Library. HIPO is an acronym for Hierarchy plus Input/Process/Output. HIPO s are graphic tools which usually describe the functions of a computer program. They show what is being done (function), not how it is being done (logic). All program modules have incorporated the HIPO in their design process.

There are two types of HIPO s: the Visual Table of Contents (VTOC) and the Input/Process/Output form. Following are descriptions of the two HIPO forms. See Appendix B of this Volume V for illustrations of the forms.

1. Visual Table of Contents (VTOC) (HIPO diagram 1)

   a. The body of the VTOC looks like an organization chart.

   b. The legend defines the three symbols used on the Input/Process/Output form, two arrow symbols and the "at" symbol.

c. Visual Table of Contents: lists the members illustrated on the form.

2. Input/Process/Output Form (Hipo design #2)

a. Diagram Type: states whether the HIPO is an Overview or Detail.

b. Subsystem: the MSIS subsystem name to which the program belongs.

c. Date: is the date submitted to EPA for approval or the date the form was updated.

d. Page __ of ___ ; the number of pages for this HIPO diagram number.

e. Diagram No.: the number which uniquely identifies the HIPO. It is the same numbering system that is defined in the VTOC.

f. Description: a brief description of the program, usually the program name.

g. Input: contains the input (files, tables, input data etc.) to the steps of the program function listed in Process.

h. Process: contains a brief description of a functional step in the program.

i. Output: contains the output (files, tables, reports, etc.) created by the functional steps described in the Process section.

j. Step: contains the step numbers matching those in the Process section above.

k. Extended Description: contains a more complete explanation of the Process steps.

l. Reference HIPO: an Overview HIPO contains references to more detailed HIPO's describing the steps; (for detail diagrams, the reference repeats the HIPO Diagram Number.

m. Reference Program: contains the program number being described.

n. References Other: contains references to other documents that contain further information about or illustrate the step's

input, process, or output. Exhibit numbers are most commonly referenced with a number for an exhibit of the subsystem being described. A three-digit number preceeded by the four-letter subsystem prefix is used for an exhibit belonging to another subsystem.

Subsystem Descriptions: Again, as in the Operations Manual, the Program Documentation, Subsystem Documentation includes by subsystem a description of the general function(s) of the subsystem followed by a VTOC and description of the program interactions. Within each of the subsystems are stated the objective(s), inputs, processing options, outputs, and HIPO's for each of the program modules.

B. Program Documentation, Volume XII, Part 2, Exhibits,

Purpose: The purpose of this manual is to provide illustrations of all input forms, record layouts, report layouts, and turnaround documents associated with the Model State Information System (MSIS). Each exhibit has a number in the format AAAA.NNN where AAAA is the alphabetic subsystem abbreviation and NNN is a three-digit number from one of the following divisions:

100-199 for input forms

200-299 for record layouts

300-399 for report layouts, and

400-499 for turnaround documents.

Form Description of Record Definition: The "Record Definition" form is used to define the layout of files and tables used in MSIS. There are two types of this form. One has a cover page on one side and a detailed field description on the second side. The other type is used to continue with the detailed field description and contains detail lines on both sides. The files on the cover page contain the following information:

1. OUTPUT OF SUBSYSTEM(S): contains the subsystem(s) containing or creating the file.

2. INPUT OF SUBSYSTEM(S): contains the subsystem(s) using the file.

3. DATE: contains the date the file was submitted to EPA or the date it was updated.

4. EXHIBIT: contains a unique number identifying the Record Definition.

5. RECORD TYPE: contains whether the record is FIXED or VARIABLE.

6. RECORD SIZE: contains the total record length for fixed type records and the minimum and maximum length for variable type records.

7. PAGE ____ OF ____ : contains the page number of the total pages of the form.

8. RECORD ACCESS KEY: contains the name(s) of the data element(s) which uniquely identifies a record.

9. FILE NAME: contains the full file name.

10. FILE ID: contains the file initials.

11. RECORD NAME: is the first name on the file which is the File ID followed by RECORD. Example: PWF-RECORD.

The detail page contains the following information:

1. FILE NAME: contains the full file name.

2. FILE ID: contains the file initials.

3. RECORD NAME: contains the first name on the file or described above.

4. PAGE ____ OF ____: contains the page number.

5. LEVEL: contains the level number as it appears in the COBOL program.

6. MNEMONIC: contains the data element mnemonic for permanent files and tables.

7. PROGRAM NAME: contains the descriptive, complete (up to thirty characters) data element name.

8. CAT. NO.: contains the Data Element Dictionary catalogue number for all data elements except group names which contain "GRP."

9. DATA TYPE: contains A/N for alphanumeric or N for numeric types of data.

10. PICTURE: contains the COBOL format picture indicating the number of characters allowed for the data element.

11. OCCUR: contains the number of times a data element or group can be repeated.

12. VAR: "X" indicates the variable portion of a variable length record.

13. POSITIONS FROM/TO: contains the start and end positions which are used for the data element, group, or maximum size of a data element with an OCCURS.

List of Exhibits: All MSIS forms and layouts are represented here by subsystem.

Code Tables: Included with this document is a series of code tables indicating the contents of the computer tables supplied.

Glossary: The glossary is similar to that in the User's Manual.

C. Program Documentation, Data Element Dictionary, Volume XII, Part 3

Purpose: The purpose of this manual is to provide full descriptions of each of the data elements, or fields, contained on the permanent files and tables within the Model State Information System (MSIS). All the data elements in MSIS have been assigned a unique catalogue number to aid in the use of the documentation of the system.

Form Description: Each of the data element definitions is presented on a pre-printed form. See Appendix B of this Volume V for an example of the "Data Element Description" form, which is used to define the data element's names, descriptions, acceptable values, and usage. The fields on this form contain the following information:

1. DATE: contains the date submitted for EPA approval or the date last updated.

2. VERSION: contains information identifying updated versions of the form.

3. REQUESTED BY EPA TO BE REPORTED ANNUALLY: contains whether or not the data element is needed for EPA reporting.

4. MANDATED FOR MSIS PROCESSING REQUIREMENTS: contains whether or not the data element is necessary for processing and is thus necessary for record creation.

5. CATALOGUE NUMBER: contains the number associated with the data element.

6. MNEMONIC NAME: contains the abbreviated (10 characters or less) name for the data element.

7. PROGRAM NAME: contains the extended (30 characters or less) name for the data element in the programs.

8. DESCRIPTION AND USE: contains a brief description of the data element and its use.

9. DATA TYPE: contains N (numeric) or A/N (alphanumeric).

10. PICTURE: contains the COBOL standard picture of the data element.

11. SOURCE(S): contains where the information for the creation of the data element comes from. Generally, this is an input form.

12. INPUT TO: contains X s under those subsystems using the data element.

13. OUTPUT OF: contains X s under those subsystems producing the data element checked off.

14. ACCEPTABLE VALUES: contains the acceptable values for the data element. If the acceptable values are on the Code Value Table, then the maximum number of acceptable values must be listed here.

15. ADDITIONAL COMMENTS: contains additional explanation.

Catalogue Numbers: This section contains a short description of the numbers assigned to each of the data elements.

Index of Data Element Descriptions: The Data Element Dictionary is useful as a reference to descriptions of data elements. There are two ways a user may encounter a

data element and need or desire a description of the data element; that is: name or catalogue number. The dictionary is in catalogue number sequence and contains an index in that sequence. Also, provided for easy reference is an alphabetical cross reference index by data element name.

Data Element Descriptions: This is the dictionary portion of the manual. Each page is a form which contains the definition of one data element. There are approximately 550 data elements in MSIS.

APPENDICES

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B. Table

VII. Standard Error Messages for Processing Options

VIII. Subsystem Descriptions

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1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

B. Regulations Subsystem (REGS)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

C. Water Quality Compliance Subsystem (WAQC)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

D. Federal Reporting Subsystem (FEDR)

1. General Description
2. Error Messages and Actions

E. Standard Processing Subsystem (MSIS)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

F. Variances and Exemptions Subsystem (VAEX)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

G. Enforcement Actions Subsystem (ENAC)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

H. Sanitary Survey Subsystem (SRVY)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

I. Operator and Mailing Subsystem (OPER)

1. General Description
2. How to Enter Data
3. Output Reports
4. Error Messages and Actions

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D. Federal Reporting Subsystem (FEDR)

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4. PWSI020 - Public Water File (PWF) Selection
5. PWSI030 - Condensed Report
6. PWSI040 - Production Data Report
7. PWSI050 - State Discretionary Data Report
8. PWSI060 - Comprehensive Report
9. PWSI070 - Public History File (PHF) Maintenance
10. PWSI080 - Public History File (PHF) Selection
11. PWSI090 - Public History File (PHF) Purge
12. PWSI120 - Convert National Inventory
13. PWSI130 - Public Water Table (PWT) Creation

B. Regulations Subsystem (REGS)

1. General Description
2. Subsystem Flow
3. REGS010 - Regulations File (RGF) Creation
4. REGS020 - Regulations File (RGF) Report

C. Water Quality Compliance Subsystem (WAQC)

1. General Description
2. Subsystem Flow
3. WAQC010 - Periodic Sample File (PSF) Data Entry and Update
4. WAQC011 - Periodic Sample File (PSF) Transaction Report
5. WAQC020 - Sample Analysis File (SAF) Update

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6. WAQC025 - Compliance Files Creation
7. WAQC031 - Edit for Turbidity Violations
8. WAQC032 - Edit for Inorganic Violations
9. WAQC033 - Edit for Organic Violations
10. WAQC034 - Edit for Bacteriological Violations
11. WAQC035 - Edit for Gross Alpha Violations
12. WAQC036 - Edit for Gross Beta Violations
13. WAQC037 - Operation Report Violations
14. WAQC038 - Merge Compliance Files
15. WAQC040 - Chemical MCL Violations Report
16. WAQC041 - Radiological MCL Violations Report
17. WAQC050 - Bacteriological Sampling Violations Report
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19. WAQC060 - Chemical Sampling Violations Report
20. WAQC061 - Radiological Sampling Violations Report
21. WAQC070 - Bacteriological MCL Violations Report
22. WAQC080 - Turbidity MCL Violations Report
23. WAQC090 - Late Monthly Operations Report
24. WAQC100 - Sample Analysis File (SAF) Selection
25. WAQC110 - Chemical Analysis Summary Report
26. WAQC111 - Radiological Analysis Summary Report
27. WAQC112 - Bacteriological Analysis Summary Report
28. WAQC113 - Turbidity Analysis Summary Report
29. WAQC120 - Violations File (VIF) Data Entry and Update
30. WAQC125 - Violations File (VIF) Selection
31. WAQC130 - Sampling Schedule
32. WAQC140 - Chemical & Radiological Schedule Report
33. WAQC150 - Chemical & Radiological Analysis Report Form
34. WAQC170 - Turbidity & Bacteriological Analysis Report Form
35. WAQC180 - Turbidity & Bacteriological Summary Form
36. WAQC200 - Mailing Labels & Report Cards
37. WAQC210 - LabTable (LBT) Creation
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D. Federal Reporting Subsystem (FEDR)

1. General Description
2. Subsystem Flow
3. FEDR010 - Create Modified Public Water File (PWF)
4. FEDR020 - Create Deviations File (DVF)

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E. Standard Processing Subsystem (MSIS)

1. General Description
2. Subsystem Flow
3. MSIS010 - Standard Error Processing
4. MSIS020 - Standard History File (SHF) Maintenance
5. MSIS030 - Standard Tables Creation
6. MSIS040 - Standard History File (SHF) Selection
7. MSIS050 - Standard History File (SHF) Purge

F. Variances and Exemptions Subsystem (VAEX)

1. General Description
2. Subsystem Flow
3. VAEX010 - Variances and Exemptions File (VEF)
4. VAEX020 - Compliance Schedule Report
5. VAEX030 - Compliance Schedule in Arrears Report
6. VAEX040 - Variances and Exemptions File (VEF) Selection
7. VAEX041 - Condensed Report
8. VAEX050 - Case History Report

G. Enforcement Actions Subsystem (ENAC)

1. General Description
2. Subsystem Flow
3. ENAC010 - Enforcement Actions File (EAF) Data Entry and Update
4. ENAC020 - Enforcement Actions File (EAF) Selection
5. ENAC030 - Case History Report
6. ENAC040 - Condensed Report

H. Sanitary Survey Subsystem (SRVY)

1. General Description
2. Subsystem Flow
3. SRVY010 - Survey Scheduling
4. SRVY020 - Schedule Report

I. Operator and Mailing Subsystem (OPER)

1. General Description
2. Subsystem Flow
3. OPER010 - Operator and Mailing File (OMF) Data Entry and Update
4. OPER020 - Operator and Mailing (OMF) Selection
5. OPER030 - Operator Report
6. OPER040 - Distribution Report
7. OPER050 - Mailing Labels

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- B. Regulations Subsystem (REGS)
- C. Water Quality Compliance Subsystem (WAQC)
- D. Federal Reporting Subsystem (FEDR)
- E. Standard Processing Subsystem (MSIS)
- F. Variances & Exemptions Subsystem (VAEX)
- G. Enforcement Actions Subsystem (ENAC)
- H. Sanitary Survey Subsystem (SRVY)
- I. Operator & Mailing Subsystem (OPER)

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1. File Maintenance
2. Error Processing
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2. COBOL Programming Names
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D. Files and Tables
E. Hierarchy plus Input/Process/Output Diagram Description
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III. Subsystem Descriptions

A. Public Water System Inventory Subsystem (PWSI)

1. General Description
2. PWSI Visual Table of Contents
3. PWSI Subsystem Overview
4. Public Water File (PWF) Data Entry and Update PWSI010
5. Public Water File (PWF) Selection PWSI020
6. Condensed Report PWSI030
7. Production Data Report PWSI040
8. State Discretionary Data Report PWSI050
9. Comprehensive Report PWSI060
10. Public History File (PHF) Maintenance PWSI070
11. Public History File (PHF) Selection PWSI080
12. Public History File (PHF) Purge PWSI090
13. Convert National Inventory PWSI120
14. Public Water Table (PWT) Creation PWSI130

B. Regulations Subsystem (REGS)

1.	General Description	
2.	REGS Visual Table of Contents	
3.	REGS Subsystem Overview	
4.	Regulations File (RGF) Creation	REGS010
5.	Regulations File (RGF) Report	REGS020

C. Water Quality Compliance Subsystem (WAQC)

1.	General Description	
2.	WAQC Visual Table of Contents	
3.	WAQC Subsystem Overview	
4.	Periodic Sample File (PSF) Data Entry and Update	WAQC010
5.	Periodic Sample File (PSF) Transaction Report	WAQC011
6.	Sample Analysis File (SAF) Update	WAQC020
7.	Compliance Files Creation	WAQC025
8.	Edit for Turbidity Violations	WAQC031
9.	Edit for Inorganic Violations	WAQC032
10.	Edit for Organic Violations	WAQC033
11.	Edit for Bacteriological Violations	WAQC034
12.	Edit for Gross Alpha Violations	WAQC035
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14.	Operation Report Violations	WAQC037
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17.	Radiological MCL Violations Report	WAQC041
18.	Bacteriological Sampling Violations Report	WAQC050
19.	Turbidity Sampling Violations Report	WAQC051
20.	Chemical Sampling Violations Report	WAQC060
21.	Radiological Sampling Violations Report	WAQC061
21.	Radiological Sampling Violations Report	WAQC061
22.	Bacteriological MCL Violations Report	WAQC070
23.	Turbidity MCL Violations Report	WAQC080
24.	Late Monthly Operations Report	WAQC090
25.	Sample Analysis File (SAF) Selection	WAQC100
26.	Chemical Analysis Summary Report	WAQC110
27.	Radiological Analysis Summary Report	WAQC111
28.	Bacteriological Analysis Summary Report	WAQC112
29.	Turbidity Analyses Summary Report	WAQC113
30.	Violations File (VIF) Data Entry and Update	WAQC120
31.	Violations File (VIF) Selection	WAQC125
33.	Chemical and Radiological Schedule Report	WAQC140
34.	Chemical and Radiological Analysis Report Form	WAQC150
35.	Turbidity and Bacteriological Sample Analyses Form	WAQC170
36.	Turbidity and Bacteriological Summary	

	Form	WAQC180
37.	Mailing Labels and Report Cards	WAQC200
38.	Lab Table (LBT) Creation	WAQC210
39.	Sample Analysis File (SAF) Purge	WAQC220

D. Federal Reporting Subsystem (FEDR)

1.	General Description	
2.	FEDR Visual Table of Contents	
3.	FEDR Subsystem Overview	
4.	Create Modified Public Water File (PWF)	FEDR010
5.	Create Deviations File (DVF)	FEDR020

E. Standard Processing Subsystem (MSIS)

1.	General Description	
2.	MSIS Visual Table of Contents	
3.	MSIS Subsystem Overview	
4.	Standard Error Processing	MSIS010
5.	Standard History File (SHF) Maintenance	MSIS020
6.	Standard Tables Creation	MSIS030
7.	Standard History File (SHF) Selection	MSIS040
8.	Standard History File (SHF) Purge	MSIS050

F. Variances and Exemptions Subsystem (VAEX)

1.	General Description	
2.	VAEX Visual Table of Contents	
3.	VAEX Subsystem Overview	
4.	Variances and Exemptions File (VEF) Data Entry and Update	VAEX010
5.	Compliance Schedule Report	VAEX020
6.	Compliance Schedule in Arrears Report	VAEX030
7.	Variances and Exemptions File (VEF) Selection	
8.	Condensed Report	VAEX041
9.	Case History Report	VAEX050

G. Enforcement Actions Subsystem (ENAC)

1.	General Description	
2.	ENAC Visual Table of Contents	
3.	ENAC Subsystem Overview	
4.	Enforcement Actions File (EAF) Data Entry and Update	ENAC010
5.	Enforcement Actions File (EAF) Selection	ENAC020
6.	Case History Report	ENAC030
7.	Condensed Report	ENAC040

H. Sanitary Survey Subsystem (SRVY)

1.	General Description	
2.	SRVY Visual Table of Contents	

3. SRVY Subsystem Overview
4. Survey Scheduling SRVY010
5. Schedule Report SRVY020

I. Operator and Mailing Subsystem (OPER)

1. General Description
2. OPER Visual Table of Contents
3. OPER Subsystem Overview
4. Operator and Mailing File (OMF) Data Entry and Update OPER010
5. Operator and Mailing File (OMF) Selection OPER020
6. Operator Report OPER030
7. Distribution Report OPER040
8. Mailing Labels OPER050

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III. List of Exhibits

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2. Record layouts
3. Report layouts
4. Turnaround documents

B. Regulations Subsystem (REGS)

1. Input forms
2. Record layouts
3. Report layouts

C. Water Quality Compliance Subsystem (WAQC)

1. Input forms
2. Record layouts
3. Report layouts
4. Turnaround documents

D. Federal Reporting Subsystem (FEDR)

1. Input forms
2. Record layouts

E. Standard Processing Subsystem (MSIS)

1. Input forms
2. Record layouts
3. Report layouts

F. Variances and Exemptions Subsystem VAEX

1. Input forms
2. Record layouts
3. Report layouts

G. Enforcement Actions Subsystem (ENAC)

1. Input forms

2. Record layouts
3. Report layouts

H. Sanitary Survey Subsystem (SRVY)

1. Input forms
2. Record layouts
3. Report layouts

I. Operator and Mailing Subsystem (OPER)

1. Input forms
2. Record layouts
3. Report layouts

IV. Code Tables

V. Glossary

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PROGRAM DOCUMENTATION, DATA ELEMENT DICTIONARY TABLE OF CONTENTS

I. Purpose

II. Form Description

III. Catalogue Numbers

IV. Index of Data Element Descriptions

- A. Numerical Sequence by Catalogue Number
- B. Alphabetical Sequence by COBOL Programming Name

V. Data Element Descriptions

Appendix B.1. **MODEL STATE INFORMATION SYSTEM**
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME:	EXHIBIT:
PURPOSE:	LEGEND:

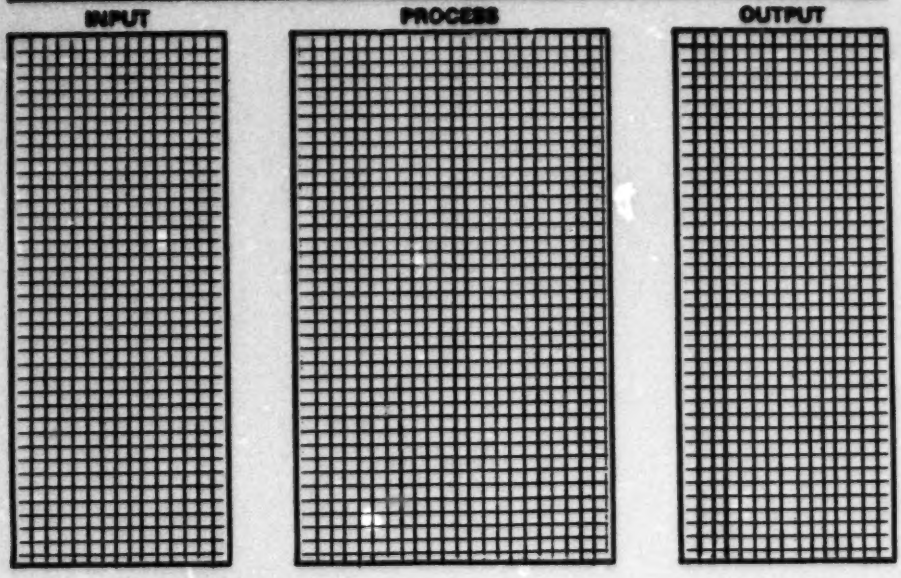
CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS

PAGE OF

Appendix B.2. **MODEL STATE INFORMATION SYSTEM**

Diagram Type: _____ Subsystem: _____ Date: _____ Page: __ of __

Diagram No.: _____ Description: _____



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INFO	PROGRAM	OTHER

Appendix B.3.

MODEL STATE INFORMATION SYSTEM
KEYPUNCH INSTRUCTIONS

SOURCE DOCUMENT NAME:	EXHIBIT:
RECEIVED FROM:	SEND CARDS TO:

FREQUENCY: ☐ DAILY ☐ WEEK'Y ☐ BI-WEEKLY ☐ ANNUAL ☐ MONTHLY ☐ QUARTERLY ☐ OTHER

DUE IN		DUE OUT	
FREQ.	DAY	FREQ.	DAY

LEGEND:

A = Alpha
N = Numeric
A/N = Alphanumeric
PAS = Punch As Shown
LJ = Left Justify
RJ = Right Justify
PRE/O = Precede Zero
FOL/O = Follow Zero
ZIN = Zero If None
SIN = Skip If None
PP = Prepunched
DUP = Duplicate
B = Blank

ESTIMATED	
KEY STROKES PER CARD	CARD VOLUME

CARD COL.		FIELD DESCRIPTION	INSTRUCTIONS	
FROM	TO		KEYPUNCH	OTHER

PAGE OF

MODEL STATE INFORMATION SYSTEM

RECORD DEFINITION

OUTPUT OF SUBSYSTEM (S) :		DATE:	EXHIBIT:
		RECORD TYPE:	PAGE:
		RECORD SIZE:	OF
		RECORD ACCESS KEY:	
INPUT TO SUBSYSTEM (S) :			
FILE NAME:	FILE ID:	RECORD NAME:	

MODEL STATE INFORMATION SYSTEM

RECORD DEFINITION

FILE NAME:	FILE ID:	RECORD NAME:	PAGE: OF

FIELD DESCRIPTION

DATA ELEMENT				DATA TYPE	PICTURE	OCCUR	VAR	POSITIONS	
LEVEL	MNEMONIC	PROGRAM NAME	CAT. NO.					FROM	TO

WAQC040

MODEL STATE INFORMATION SYSTEM
WATER QUALITY COMPLIANCE SUBSYSTEM

WAQC.119

SORT OPTIONS FOR JOB _____ _____

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	5-6	7-16	17	A=ASCENDING D=DESCENDING
	18-19	20-29	30	A=ASCENDING D=DESCENDING
	31-32	33-42	43	A=ASCENDING D=DESCENDING
	44-45	46-55	56	A=ASCENDING D=DESCENDING
	57-58	59-68	69	A=ASCENDING D=DESCENDING

PREPARED BY _____ DATE __/__/__

APPROVED BY _____ DATE __/__/__

Appendix C.1.

MSISO40

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

MSIS.100

STANDARD HISTORY FILE

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1			
1-4	5-14	15-29	30-31
DUP 1 - 4			
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			

PREPARED BY _____ DATE ___/___/___

APPROVED BY _____ DATE ___/___/___

Appendix C.2.

M319040

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

M319.107

STANDARD HISTORY FILE

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN, EQ = EQUAL, GT = GREATER THAN, NL = NOT LESS THAN, NG = NOT GREATER THAN, NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
SEL2 (1-4)	01	(5-6)	02	(7-8)	03	(9-10)	04	(11-12)
	05	(13-14)	06	(15-16)	07	(17-18)	08	(19-20)
	09	(21-22)	10	(23-24)	11	(25-26)	12	(27-28)
	13	(29-30)	14	(31-32)	15	(33-34)	16	(35-36)
	17	(37-38)	18	(39-40)	19	(41-42)	20	(43-44)
	21	(45-46)	22	(47-48)	23	(49-50)	24	(51-52)
	25	(53-54)	26	(55-56)	27	(57-58)	28	(59-60)
	29	(61-62)	30	(63-64)	31	(65-66)	32	(67-68)
	33	(69-70)	34	(71-72)	35	(73-74)		

PREPARED BY _____ DATE / /

APPROVED BY _____ DATE / /

VARIES

1 of 1
10/28/76

This report is produced by any module that needs an Update Statistics Report.
SouthWestern Ohio Regional Computer Center

EXHIBIT MSIS.300

XXXXXXX ①

MODEL STATE INFORMATION SYSTEM

X——————————X ②

DATE XX/XX/XX

STANDARD UPDATE STATISTICS REPORT

PAGE ZZZZ9

	TOTAL	% RELATIVE TO TE ORIGINAL FILE
1. NUMBER OF RECORDS ORIGINALLY ON THE FILE	ZZZ,ZZZ,ZZ9	
2. NUMBER OF ACCEPTABLE DATA ENTRY TRANSACTIONS	ZZZ,ZZZ,ZZ9	
3. NUMBER OF STANDARD ERROR RECORDS CREATED	ZZZ,ZZZ,ZZ9	
4. NUMBER OF RECORDS MODIFIED ON THE FILE	ZZZ,ZZZ,ZZ9	ZZZ9 %
5. NUMBER OF NEW RECORDS ADDED TO THE FILE	ZZZ,ZZZ,ZZ9	ZZZ9 %
6. NUMBER OF RECORDS DELETED FROM THE FILE	ZZZ,ZZZ,ZZ9	ZZZ9 %
7. NUMBER OF RECORDS NOW ON THE FILE	ZZZ,ZZZ,ZZ9	ZZZ9 %

① PROGRAM NAME

② SUBSYSTEM NAME

REGS020 1 of 1
9/23/76

RGP Report Module
SouthWestern Ohio Regional Computer Center
EXHIBIT REGS.302

MODEL STATE INFORMATION SYSTEM
REGULATIONS SUBSYSTEM

REGS#2#

DATE XX/XX/XX REGULATIONS REPORT - TURBIDITY CONTAMINANT PAGE ####9

CONTAMINANT ID	REGULATION/LEVEL	CONTAMINANT NAME
#1##	XX	TURBIDITY

MCL FOR MONTHLY AVERAGE	MCL FOR CONSECUTIVE SAMPLES	NUMBER OF CONSECUTIVE SAMPLES
#9	#9	#9

EFFECTIVE DATE	APPLY TO ALL SOURCES	INCLUDE REPEAT SAMPLES IN AVERAGE
XX/XX/XX	X	X

FREQUENCY OF MONITORING

COMMUNITY PWS: #69 NON-COMMUNITY PWS: #69

MINIMUM RESAMPLING PERIOD IF MCL EXCEEDED
#9

Appendix D.2.

WAQC210 1 OF 1
10/28/76

LBT CITATION MODULE

SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT WAQC.300

WAQC210 MODEL STATE INFORMATION SYSTEM
WATER QUALITY COMPLIANCE SUBSYSTEM

DATE XX/XX/XX LABORATORY TABLE REPORT PAGE 22229

LAB ID	LABORATORY NAME	CONTAMINANT GROUP	AUTHORIZED ANALYSIS METHOD CODES
XXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	0	XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
OWNER TYPE	EXPIRATION DATE		XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
X	XX/XX/XX	1	XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
			XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
		2	XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
			XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
		3	XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
			XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
		4	XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX
			XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX XXX

Appendix D.3.

11/18/76

PRODUCTION DATA REPORT MODULE
SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT PWSI.314

PWSI040 — MODEL STATE INFORMATION SYSTEM
PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

DATE XX/XX/XX — PRODUCTION AND CAPACITY DATA
ERROR MESSAGE REPORT ① — PAGE ZZZZ9

****
****
JOB TERMINATED - INVALID PROCESSING OPTIONS ②
****
****

①② THESE LINES DO NOT PRINT IF PROCESSING OPTIONS ARE VAILD

```
                MSISOIO                                  1 OF 1
                                                         10/28/76
STANDARD ERROR PROCESSING
            SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT MSIS.309


                                        MODEL STATE INFORMATION SYSTEM
                                        XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (2)
XXXXXXX (1)
DATE XX/XX/XX                  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (3)          PAGE ZZZZ9

*******************************************************************************************************************

                    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (4)
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (5)
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (4)
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (5)
                                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

*******************************************************************************************************************
```

① PROGRAM NAME

② SUBSYSTEM NAME

③ REPORT NAME

④ IMAGES OF RECORDS THAT ARE IN ERROR - PROC, SEL1, SEL2, SORT, ETC.

⑤ ALL ERROR MESSAGES THAT ARE ASSOCIATED WITH EACH RECORD IN ERROR

Appendix D.5.

Appendix E

Standard Error Messages for Processing Options

Any program which uses processing options records may produce any of the following messages:

1. Standard Error Messages for PROC Records

   ERROR - TWO PROC RECORDS SUPPLIED

   ERROR - NO PROCESSING OPTION RECORDS WERE PROVIDED

   ERROR - PROC TYPE NOT SEL1, SEL2, SORT, OR PROC

   ERROR - PROC RECORD CONTAINS AN INVALID DATE

2. Standard Error Messages for SORT Records

   ERROR - MAXIMUM SORT-KEY SIZE HAS BEEN EXCEEDED

   ERROR - SORT SEQUENCE FIELD NOT NUMERIC

   ERROR - TWO SORT FIELDS HAVE THE SAME SEQUENCE NUM

   ERROR - SORT SEQUENCE NUMBER GREATER THAN 10

   ERROR - SORT OPTION MNEMONIC - NAME IS INVALID

   ERROR - SORT MODE IS NOT ASCENDING OR DESCENDING

   ERROR - NONCONSECUTIVE SORT SEQUENCE VALUES

3. Standard Error Messages for SEL1 and SEL2 Records

   ERROR - INVALID FILE-ID IN SEL1 RECORD

   ERROR - TWO SEL1 RECORDS HAVE THE SAME LOGIC ID

   ERROR - MNEMONIC NAME IN SEL1 RECORD IS INVALID

   ERROR - SEL1 VALUE TOO LONG FOR SPECIFIED MNEMONIC

   ERROR - NO SEL1 OPTION RECORD WAS PROVIDED

   ERROR - LOGIC ID GREATER THAN 35 IN SEL1 RECORD

   ERROR - SEL1 UPDATE-DATE VALUE IN NOT A VALID DATE

   ERROR - SEL1 RECORD-ID VALUE NOT NUMERIC

   ERROR - SEL1 CATALOGUE-NUMBER VALUE NOT NUMERIC

ERROR - SEL2 OPERAND HAS NO MATCHING SEL1 RECORD

ERROR - NO SEL2 OPTION RECORD WAS PROVIDED

ERROR - MORE THAN 35 SEL2 RECORDS WERE PROVIDED

ERROR - SEL2 RECORD HAS INVALID RATIONAL SYMBOL